




3. Resistance Measurement

- 1) Connect red test lead to signal input terminal, and black test lead to COM terminal.
- 2) a. UT202T: When powered on, the meter enters auto measurement mode and the LCD displays "AUTO".
b. UT202BT: Short press    (Blue) to switch to resistance measurement. Connect test leads to both ends of measured resistance in parallel.
- 3) Read the measurement result from the display.

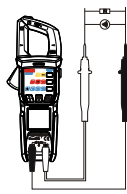






Figure 5

Warning:

- UT202T: If the measured resistor is open or the resistance exceeds the maximum range, the LCD will display "OL".
- Before measuring resistance online, switch off the power supply of the circuit, and completely discharge all capacitors to ensure accurate measurement.
- If the resistance is note less than 0.5Ω when the test leads are short-circuited, please check the test leads for looseness or other abnormalities.
- Do not input voltage higher than 30V to avoid personal injury.

4. Capacitance Measurement

- 1) Connect red test lead to signal input terminal, and black test lead to COM terminal.
- 2) a. UT202T: Short press  to enter capacitance measurement mode.
b. UT202BT: Short press    (Blue) to select capacitance measurement. Connect test leads to both ends of measured capacitance in parallel.
- 3) Read the measurement result from the display.

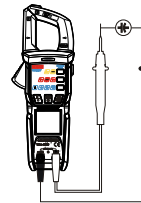


Figure 6

Warning:

- If the measured capacitor is short-circuited or the capacitance exceeds the maximum range, the LCD will display "OL".
- When measuring capacitance >400μF, it may take some time to steady the readings.
- Before measuring, fully discharge all capacitors (especially for capacitors with high voltage) to avoid damage to the meter and user.

5. Temperature Measurement (UT202BT)

- 1) Short press [ON] [HOLD] [OFF] (Blue) to switch to temperature measurement mode, the LCD display "room temperature when the circuit is open."
- 2) Connect K-type thermocouple to input terminal.
- 3) Fix the temperature probe on the object to be tested, and read the temperature value of the tested object directly from the display after a few seconds. (The temperature unit for primary display is Celsius, Fahrenheit for auxiliary display).

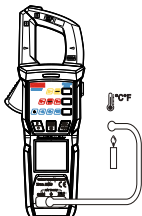


Figure 7

Warning:

- The ambient temperature of the meter should be in the range of 18-28°C, otherwise it will cause measurement error.
- Do not input voltage higher than 30V to avoid personal injury.
- Remove the temperature probe after all measurement operations are completed.

6. AC Current Measurement

- 1) a. UT202T: When powered on, the meter enters auto measurement mode and the LCD displays "AUTO".
b. UT202BT: Short press to $\text{[AC]} \text{[AC]}$ (Yellow) to select ACA or ACA-LPF measurement.
- 2) Press the trigger to open the clamp jaws, clamp the conductor to be tested, then release the trigger slowly until the clamp jaws are closed completely.
- 3) Read the measurement result from the display. The primary displayed value is true-RMS of current, the auxiliary displayed value is frequency value.
- 4) UT202BT: Under ACA mode, long press [PEAK] to enter AC peak capturing function, short press [PEAK] to cycle through P-MAX and P-MIN, long press [PEAK] again to exit AC peak capturing function. (Capturing function is enabled only at maximum range, no decimal is displayed).
- UT202BT: Under ACA mode, long press [INRUSH] (Yellow) to start inrush current measurement function, the instantaneous current can be measured at the same time that the electric appliance is turned on. Inrush current is the highest AC current within 100ms. (As shown below)
Long press [INRUSH] (Yellow) again to exit inrush current measurement function.

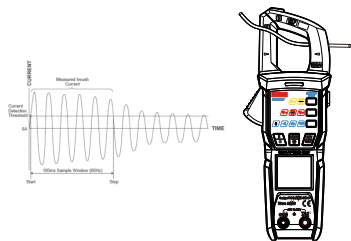


Figure 8

⚠ Warning:

- Only one conductor can be measured at a time, otherwise the measurement reading will be wrong.
- To ensure measurement accuracy, center the conductor in the jaws. Otherwise, $\pm 1.0\%$ additional error in reading will be produced.
- When monitoring frequency online, the frequency must be 40Hz~100Hz, and input amplitude must be $\geq 1A$ rms.
- UT202BT: The inside temperature of clamp jaws will be detected when measuring AC current, if the inside temperature of clamp jaws is higher than $80^{\circ}C \pm 10^{\circ}C$, "CUT" will appear on the auxiliary display, and the meter sounds an alarm, the yellow warning light turns on as well.

7. Non-Contact Voltage Sensing (NCV)

- 1) By short pressing "NCV" button, the meter will enter NCV measurement mode and the LCD will display "EF".
- 2) Bring the NCV sensing end of the clamp jaws close to a charged electric field (socket, insulated wire, etc.), the LCD will display the segment "-", the buzzer will beep, and the red LED will flash. As the intensity of the measured electric field increases, the more the segments (----) are displayed, the higher the frequency at which the buzzer beeps and the red LED flashes.

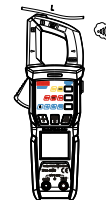


Figure 9

⚠ Warning:

- Use the NCV sensing end of the clamp jaws to approach the measured electric field, otherwise the measurement sensitivity will be affected.
- When the measured electric field voltage is $\geq 100V$ (AC), observe whether the conductor of the measured electric field is insulated to avoid personal injury.

8. Simultaneous Measurement of AC Current and AC Voltage (V+A) (UT202T)

- 1) Connect red test lead to signal input terminal, and black test lead to COM terminal.
- 2) When powered on, the meter enters auto measurement mode and the LCD displays "AUTO". Connect test leads to the power supply or the load to be measured in parallel.
- 3) Press the trigger to open the clamp jaws, clamp the conductor to be tested, then release the trigger slowly until the clamp jaws are closed completely.
- 4) Read the measurement result from the display. If there are signals on voltage and current, the primary displayed value is true-RMS of current, the auxiliary displayed value is voltage value.

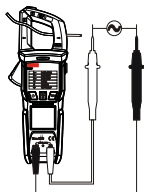



Figure 10

⚠ Warning:







- Frequency requirement : 50Hz~60Hz; Current input shall be $>$ about 0.3A; Voltage input shall be $>$ about 0.6V


- Do not input voltage above 600V. Although it is possible to measure higher voltage, it may damage the meter.
- Be cautious to avoid electric shock when measuring high voltage.
- When the measured voltage is $\geq 30V$ (AC/DC), the LCD will display the high voltage alarm prompt "⚡". When the measured voltage is $\geq 600VAC/600VDC$, the meter will automatically sound an alarm and the red light will turn on.
- To ensure measurement accuracy, center the conductor in the jaws. Otherwise, $\pm 1.0\%$ additional error in reading will be produced. Only one conductor can be measured at a time, otherwise the measurement reading will be wrong.


9. Other functions

- UT202BT Bluetooth function: Short press to  turn on/off Bluetooth. If the meter is not connected to the APP After the Bluetooth is turned on, the Bluetooth symbol on LCD will flash. Open "iDMM2.0" APP, search UT202BT, and then make connection. Or scan the QR code on bottom cover with "iDMM2.0" to make connection. After connected, data transmission, button control and other operations can be performed, the Bluetooth symbol on LCD will be displayed constantly.

The Bluetooth will be turned off automatically if the meter is not connected with the APP within 5 minutes or data transmission is interrupted for more than 5 minutes. The auto power off function will be disabled after the Bluetooth is turned on.

- Auto power off: If there is no any operation within 15 minutes, the meter will automatically shut down to save power. After the meter is powered off automatically, you can long press  (UT202T) /  (UT202BT) to restart the meter.
- To disable the auto power off function:
UT202T: Press  and  simultaneously to power on the meter.
UT202BT: Press  and  simultaneously to power on the meter.

After the auto power off function is disabled, the LCD will not display “”. The auto power off function will be enabled after restarting the meter.

- Buzzer: When any enabled button is pressed, the buzzer will make one beep. When measuring voltage or current, the buzzer will beep intermittently to indicate overrange.
- Low battery detection: The LCD will display “” symbol if the supply voltage is lower than about 2.4V. The meter cannot be powered on if the supply voltage is lower than about 2.2V.

X. Technical Specifications

Accuracy: \pm (a% of reading + b digits), 1 year calibration period

Ambient temperature and humidity: 23°C \pm 5°C; \leq 80%RH

Temperature coefficient: To ensure measurement accuracy, operating temperature should be within 18°C ~28°C and the fluctuation range should be within \pm 1°C. When the temperature is <18 °C or >28 °C, add temperature coefficient error 0.1 x (specified accuracy)/ °C

(1) DC Voltage

Range	Resolution	Accuracy	Overload Protection
9.999V	0.001V	\pm (0.5%+3)	600Vrms
99.99V	0.01V		
600V	0.1V		

- Input impedance: About 10M Ω
- Minimum identified voltage: 0.6V (UT202T)

(2) AC Voltage

1. ACV

Range	Resolution	Accuracy	Overload Protection
9.999V	0.001V	\pm (0.8%+3)	600Vrms
99.99V	0.01V		
600V	0.1V		

2. ACV-LPF(UT202BT)

Range	Resolution	Accuracy	Overload Protection
600V	0.1V	$\pm (2.0\%+5)$	600Vrms

- Input impedance: 10M Ω
- Minimum identified voltage: 0.6V (UT202T)
- Frequency response: 40~400Hz, true RMS display
- Accuracy guarantee range: 5%~100% of range
- For the AC crest factor of non-sinusoidal wave, the additional error should be added as follows:
 - a) Add 3% when crest factor is 1~2
 - b) Add 5% when crest factor is 2~2.5
 - c) Add 7% when crest factor is 2.5~3
- If auxiliary display is frequency, the input amplitude shall be $\geq 5Vrms$ at 40Hz~1000Hz.

Note: If the frequency is greater than 400Hz, the accuracy will not be examined for primary displayed voltage.

(3) AC Current

1.ACA

Range	Resolution	Accuracy	Overload Protection
9.999A	0.001A	$\pm (2.5\%+30)$	600Arms
99.99A	0.01A	$\pm (2.5\%+5)$	
600A	0.1A		

2.ACA-LPF(UT202BT)

Range	Resolution	Accuracy	Overload Protection
600A	0.1A	$\pm (4.0\%+5)$	600Arms

3. ACA-Inrush(UT202BT)

Range	Resolution	Accuracy	Overload Protection
99.99A	0.01A	$\pm (10\%+10)$	600Arms
600A	0.1A		

- Minimum identified voltage: 0.01A
- True-RMS of sinusoidal wave, frequency response: 50~60Hz
- Accuracy guarantee range: 5%~100% of range
- For the AC crest factor of non-sinusoidal wave, the additional error should be added as follows:
 - a) Add 3% when crest factor is 1~2
 - b) Add 5% when crest factor is 2~2.5
 - c) Add 7% when crest factor is 2.5~3
- If auxiliary display is frequency, the input amplitude shall be $\geq 1Arms$ at 40Hz~100Hz.
- The accuracy of primary displayed current is guaranteed at frequency response of 50~60Hz.

(4) Resistance

1. UT202T

Range	Resolution	Accuracy	Overload Protection
999.9Ω	0.1Ω	± (0.8%+3)	600Vrms
9.999kΩ	0.001kΩ		
99.99kΩ	0.01kΩ		
999.9kΩ	0.1kΩ		
6.000MΩ	0.001MΩ	± (1.5%+3)	

- If the resistance is greater than 6MΩ, the meter enters AUTO display mode, OL is not displayed.
- Accuracy guarantee range: 1Ω~6MΩ

2. UT202BT

Range	Resolution	Accuracy	Overload Protection
99.99Ω	0.01Ω	± (0.8%+3)	600Vrms
999.9Ω	0.1Ω		
9.999kΩ	0.001kΩ		
99.99kΩ	0.01kΩ		
999.9kΩ	0.1kΩ		
9.999MΩ	0.001MΩ	± (1.5%+3)	
99.99MΩ	0.01MΩ	± (2.0%+5)	

- Voltage at open-circuit state: About 1V
- Measurement range/accuracy guarantee range: 1Ω~99.99MΩ
- Accuracy guarantee range: 5%~100% of range

(5) Continuity

Range	Resolution	Accuracy	Overload Protection
999.9Ω	0.1Ω	≤30Ω: The buzzer beeps ≥70Ω: The buzzer does not beep	600Vrms

- Open-circuit voltage: About 3.0V

(6) Capacitance

Range	Resolution	Accuracy	Overload Protection
99.99nF	0.01nF	± (4.0%+10)	600Vrms
999.9nF	0.1nF		
9.999μF	0.001μF	± (4.0%+5)	
99.99μF	0.01μF		
999.9μF	0.1μF		
9.999mF	0.001mF	± (10%+10)	
99.9mF	0.1mF		

- Accuracy guarantee range: 5%~100% of range
- In open circuit state, least significant digit may be ≤10, measured value = displayed value - open circuit value
- Open circuit allows least significant digit <20

(7) Temperature (UT202BT)

Range	Resolution	Accuracy	Overload Protection
-40°C~40°C	1°C	±5	600Vrms
40°C~400°C		± (2.0%+5)	
400°C~1000°C		± (2.5%+5)	
-40°F~104°F	2°F	±9	
104°F~752°F		± (2.0%+9)	
752°F~1832°F		± (2.5%+9)	

(8) NCV

Range	Function	Description
NCV	Non-contact voltage sensing	<p>1) ≥ 100Vrms (Frequency: 50Hz~60Hz), LED lights up/Buzzer beeps (distance<10mm). The indication status is not certain when the distance is 10mm~80mm, NCV LED is off and the buzzer keeps silent when the distance is >80mm.</p> <p>2) No voltage is sensed, the LCD displays "EF". According to the intensity of the sensed voltage, the LCD displays " ", " -", " _", " _ _", " _ _ _".</p> <p>3) The faster the red LED flashes and the buzzer beeps, the sensed voltage is stronger.</p>

(9) LED indication

Function	LED indication	Description	Error
NCV	Light off	<36V	36V ± 10V
	Light up red	When the voltage is 50V-600V, the LED flashes and the buzzer beeps from slowly to fast.	60V ± 20V
Continuity	Light off	OL (UT202BT) AUTO (UT202T)	30Ω ± 0.5Ω
	Light up red	Not conductive (>30Ω)	
	Light up green	Conductive (≤30Ω)	
Voltage	Light off	DCV<600V, ACV<600V	600V±0.1V
	Light up red	DCV≥600V, ACV≥600V	
Current	Light off	<600A	600A±0.1A
	Light up red	≥600A	
Overheating alarm (UT202BT)	Light up yellow	Internal temperature of clamp jaw > 80°C	Internal temperature of clamp jaw: 80±10°C

XI. Use the Bluetooth software (For UT202BT only)

1. Software introduction

The Bluetooth software is a mobile app that supports operating systems including iOS 10.0 or newer and Android 5.0 or newer.

2. Software installation


IOS system: Search and download "iDMM2.0" from "App Store".

Android system: Search and download "iDMM2.0" from UNI-Trend official website, or scan the QR code below to download.



(For Android system)

3. Use the software

- Short press the button  to turn on UT202BT Bluetooth, if UT202BT fails to connect with the APP, the Bluetooth symbol on the LCD will flash. Tap "iDMM2.0" icon on mobile phone to enter Navigate interface, "iDMM2.0" will search UT202BT Bluetooth automatically, after the model "UT202BT" is displayed in the list (Figure 14), please select "UT202BT" to connect. The other way to connect is to scan the QR code on UT202BT. After the connection is completed, the Bluetooth symbol on LCD will be displayed constantly, data communication, measurement value display, button control and other operations can be achieved between iDMM2.0 and UT202BT.

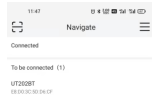


Figure 14

* Note: After UT202BT Bluetooth is turned on, if UT202BT fails to connect with "iDMM2.0" within 5 minutes or the data communication interrupts for more than 5 minutes after connection, the Bluetooth will be turned off automatically. The APO function will be disabled after the Bluetooth is turned on.

- iDMM2.0 has multiple function modules such as Bluetooth wireless communication, datalogging, device management, report generation, data share, data synchronization. ACA measurement interface is shown as figure 15. Please refer to the user manual for the function modules.

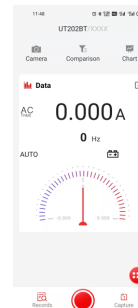


Figure 15

4. Uninstall the software

Uninstall the software through the uninstalling function of mobile phone.

XII. Maintenance

⚠ Warning: Before opening the rear cover of the meter, remove the test leads to avoid electric shock.

1. General Maintenance

- 1). When the meter is not in use, place the function switch in the OFF position to avoid continuous consumption of battery energy.
- 2). The maintenance and service must be implemented by qualified professionals or designated departments.
- 3). Clean the meter casing with a soft cloth and mild detergent. Do not use abrasives or solvents.

2. Battery Replacement

- 1) Turn off the meter and remove the test leads from the input terminals.
- 2) Unscrew the screw of the battery compartment, remove the battery cover, and replace the 2 standard AAA batteries according to the polarity indication.
- 3) Secure the battery cover and tighten the screw.

